

What is claimed is:

1. An electric power tool comprising:
 - a motor;
 - a chuck to attach a tool to a head of said chuck;
 - a transmission provided between said motor and said chuck and configured to transmit power from said motor to said chuck;
 - a housing to store said motor and said transmission, said housing having air intake ports to take in air from the external environment and an exhaust port to expel air therefrom; and
 - a fan provided between said motor and said transmission;wherein said air intake ports are provided in the vicinity of said motor and said transmission, and said exhaust port is provided in the vicinity of said fan, said fan configured to draw in two separate streams of air, a first stream of air drawn in from a motor side of said fan, and a second stream of air drawn in from a transmission side of said fan.
2. The electric power tool according to claim 1 wherein said fan is configured to draw in a larger volume of air from said motor side of said fan than from said transmission side of said fan.
3. The electric power tool according to claim 1, said fan further comprising:
 - a first draw portion to draw in said first stream of air from said motor side of said fan and to expel said first stream of air through said exhaust port; and
 - a second draw portion to draw in said second stream of air from said transmission side of said fan and to expel said second stream of air through said exhaust port.

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4. The electric power tool according to claim 3, further comprising:
a base plate provided in said fan;
said first draw portion of said fan including fan blades provided on a surface of said base plate facing said motor; and
said second draw portion of said fan including through holes formed in said base plate.

5. The electric power tool according to claim 4, wherein said through holes are formed concentrically around a rotating center of said base plate.

6. The electric power tool according to claim 4, further comprising:
a tapered guide portion provided on each wall located between said through holes.

7. The electric power tool according to claim 1, further comprising:
a cylindrical boss provided on a fan base plate to fix said fan to an output shaft of said motor, an external diameter of said cylindrical boss becoming smaller at points increasingly farther from said base plate.

8. The electric power tool according to claim 3, further comprising:
a base plate provided in said fan;
said first draw portion of said fan including a first set of fan blades provided on a surface of said base plate facing said motor; and
said second draw portion of said fan including a second set of fan blades provided on a surface of said base plate facing said transmission.

9. The electric power tool according to claim 8, wherein said first set of fan blades provided on said surface of said base plate facing said motor includes a greater number of fan blades than said second set of fan blades provided on said surface of said base plate facing said transmission, such that said fan draws in a larger volume of air from said motor side of said fan than is drawn from said transmission side of said fan.

10. The electric power tool according to claim 8, wherein each fan blade of said first set of fan blades provided on said surface of said base plate facing said motor extends a first distance toward said motor in a direction substantially perpendicular to said base plate and each fan blade of said second set of fan blades provided on said surface of said base plate facing said transmission extends a second distance toward said transmission in a direction substantially perpendicular to said base plate, and

wherein said first distance is greater than said second distance such that said fan draws in a larger volume of air from said motor side of said fan than is drawn from said transmission side of said fan.

11. The electric power tool according to claim 1, further comprising:
a straightening vane provided adjacent said fan to direct said first and second streams of air to said exhaust port.

12. The electric power tool according to claim 11, wherein said straightening vane is configured in an annular shape, said straightening vane comprising:

a center aperture through which said first stream of air from said motor side of said fan is drawn toward said fan; and

at least one air outlet slot provide on the circumference of said annular shaped straightening vane through which air is expelled toward said exhaust port.

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13. The electric power tool according to claim 1, further comprising:
a base plate provided in said fan, said base plate constructed from a highly thermally conductive material.

14. The electric power tool according to claim 1, further comprising:
a highly thermally conductive cover portion encasing said transmission; and
thermal radiation fins provided on an external side of said cover portion within a passage that directs a cooling air stream drawn in by said fan.